


A new genus and species of the subfamily Gryllinae (Orthoptera: Gryllidae) from Indonesia

Новые род и вид подсемейства Gryllinae (Orthoptera: Gryllidae) из Индонезии

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Abstract. *Mirolotmia dinocephala* **gen. et sp. nov.** of the subtribe Brachytrupina Saussure, 1877 (the tribe Gryllini) is described from the West Papua Province of Indonesia. The name *Cephalogryllini* Otte et Alexander, 1983, **syn. nov.**, is synonymised with Brachytrupina. The new genus is very similar in the general appearance to some Australian and American short-winged representatives of this subtribe, which dig burrows, but it differs in the male genitalia with three rather long lobules on the posterior epiphallic part.

Резюме. Из провинции Западное Папуа в Индонезии описан *Mirolotmia dinocephala* **gen. et sp. nov.**, относящийся к подтрибе Brachytrupina Saussure, 1877 (триба Gryllini). Название *Cephalogryllini* Otte et Alexander, 1983, **syn. nov.**, сведено в синонимы к Brachytrupina. Описываемый род внешне очень похож на некоторых австралийских и американских короткокрылых представителей этой подтрибы, роющих норы, но отличается гениталиями самца с тремя довольно длинными лопастинками на задней части эпифаллуса.

Key words: crickets, taxonomy, Indonesia, Orthoptera, Gryllidae, Gryllinae, Gryllini, Brachytrupina, new genus, new species

Ключевые слова: сверчки, таксономия, Индонезия, Orthoptera, Gryllidae, Gryllinae, Gryllini, Brachytrupina, новый род, новый вид

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Introduction

Gorochov (2019) briefly considered the subtribe Brachytrupina Saussure, 1877 of the tribe Gryllini Laicharting, 1781. In this paper, several genera from the Old World and the New World were included in this subtribe based on the characteristic male genitalia, especially complex structure of the ectoparameres divided into a few parts by membranous areas and sclerotised processes.

Most of the species undoubtedly belonging to Brachytrupina lead a more or less fossorial mode of life, but the mode of life of some other possible representatives of this subtribe (for example, *Miogryllus* Saussure, 1877 and *Itarogryllus* Gorochov, 2020) is different, and their ectoparameres often possess only traces of such complex structure. It is still not quite clear whether the latter genera belong to the Brachytrupina. Their taxonomic positions require an additional research.

Moreover, some undoubted genera of Brachytrupina are also unclear. For example, rather numerous short-winged species from Australia and New Caledonia were included in the genera *Notosciobia* Chopard, 1915 and *Cephalogryllus* Chopard, 1925 clearly belonging to the Brachytrupina but assigned to a separate tribe Cephalogryllini Otte et Alexander, 1983 (Cigliano et al., 2021). However, these species in each genus are rather diverse in morphology of the tegmina, legs and especially the male genitalia (Otte & Alexander, 1983; Otte et al., 1987). At the same time, ectoparameres in some of these species are virtually undescribed, and it is impossible to understand whether these species belong to one, two or more genera.

In addition, the genera *Gryllita* Hebard, 1935, *Rubrogryllus* Vickery, 1997, *Geogryllus* Otte et Perez-Gelabert, 2009 and *Gigagryllus* Cadena-Castañeda, 2020 were established for American short-winged forms, but the differences between these genera are not very clear, because the male genitalia in their type species are not studied or insufficiently studied. Gorochov & Izer-skiy (2019) suggested that *Gryllita*, *Rubrogryllus* and *Geogryllus* may be synonyms. This opinion led Cadena-Castañeda & García García (2020) to their synonymisation without examination of the male genitalia, but I cannot agree with such action.

Thus, many short-winged representatives of Brachytrupina require a new study. In particular, it is necessary to examine and carefully illustrate fine structure of the ectoparameres in the male genitalia. Recently, such illustrated descriptions of some Brachytrupina species were published (Gorochov, 2019, 2020). The present paper continues this series of publications. It is devoted to the description of a new short-winged genus and species from the Papuan Region, belonging to this subtribe.

Material and methods

All the specimens examined are deposited in the collection of the Zoological Institute, Russian Academy of Sciences, St Petersburg. These specimens are dry and pinned. Photographs of their morphological structures were taken under a Leica M216 stereomicroscope with a Leica DFC290 camera.

Taxonomic part

Family **Gryllidae** Laicharting, 1781

Subfamily **Gryllinae** Laicharting, 1781

Tribe **Gryllini** Laicharting, 1781

Subtribe **Brachytrupina** Saussure, 1877

Cephalogryllini Otte et Alexander, 1983, **syn. nov.**

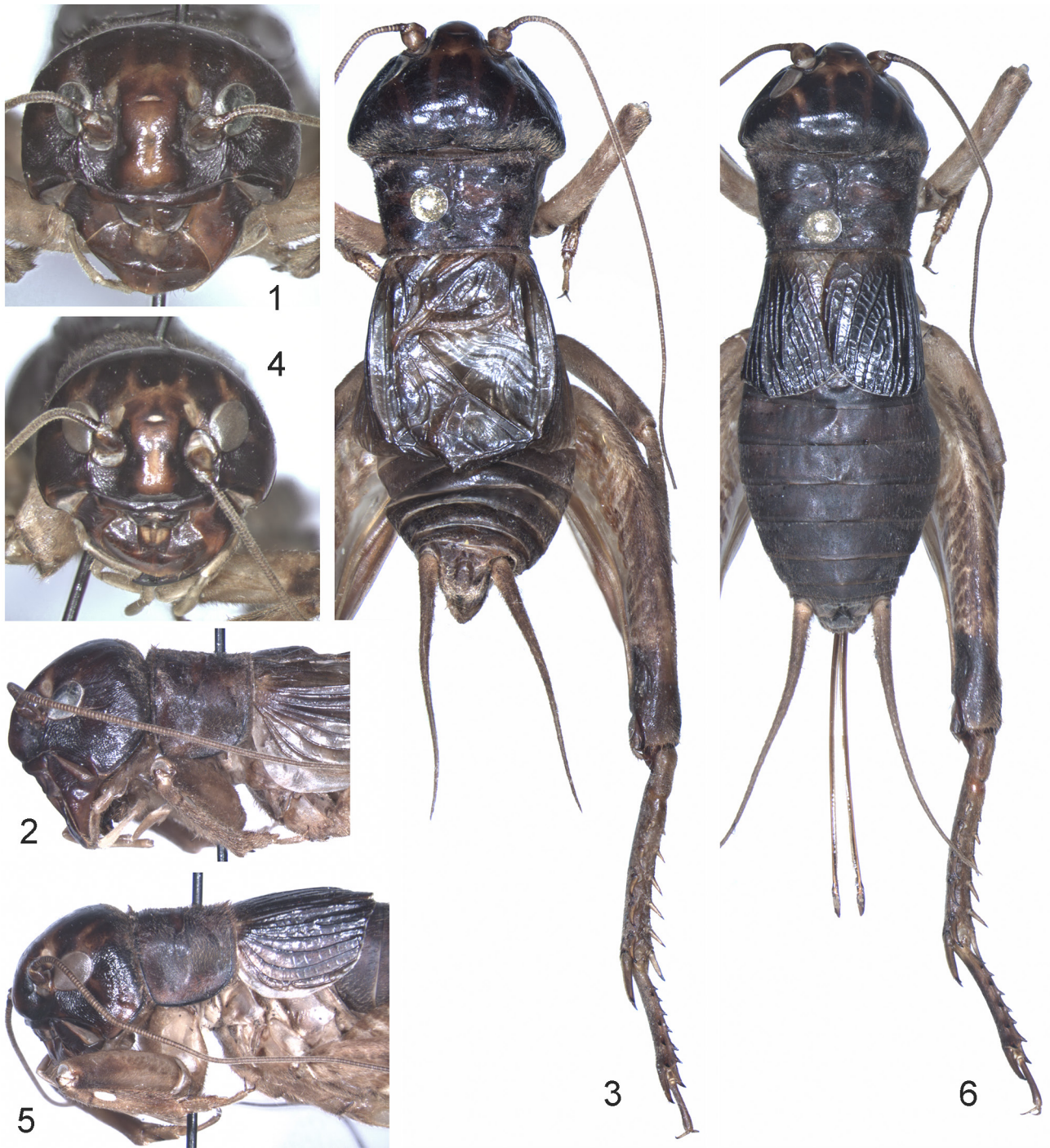
Remarks. The above-mentioned genera *Cephalogryllus* and *Notosciobia* have the male genitalia with the ectoparameres mostly characteristic for the subtribe Brachytrupina, i.e. complicated and divided by membranous areas. Moreover, the authors of Cephalogryllini also included in this group the genera *Apterogryllus* Saussure, 1877 and *Daintria* Otte, 1994 (*Stenocephalus* Otte et Alexander, 1983, junior homonym) with poorly studied ectoparameres (Otte & Alexander, 1983). *Daintria* may be a synonym or a subgenus of the genus *Phonarellus* Gorochov, 1983, but the latter genus clearly belongs to Brachytrupina. Thus, Cephalogryllini is undoubtedly a synonym of Brachytrupina.

Genus ***Mirolotmia* gen. nov.**

Type species: *Mirolotmia dinocephala* **sp. nov.**

Diagnosis. Body moderately large to medium-sized. General appearance typical of Brachytrupina crickets digging burrows and having shortened tegmina, but with characteristic features listed below.

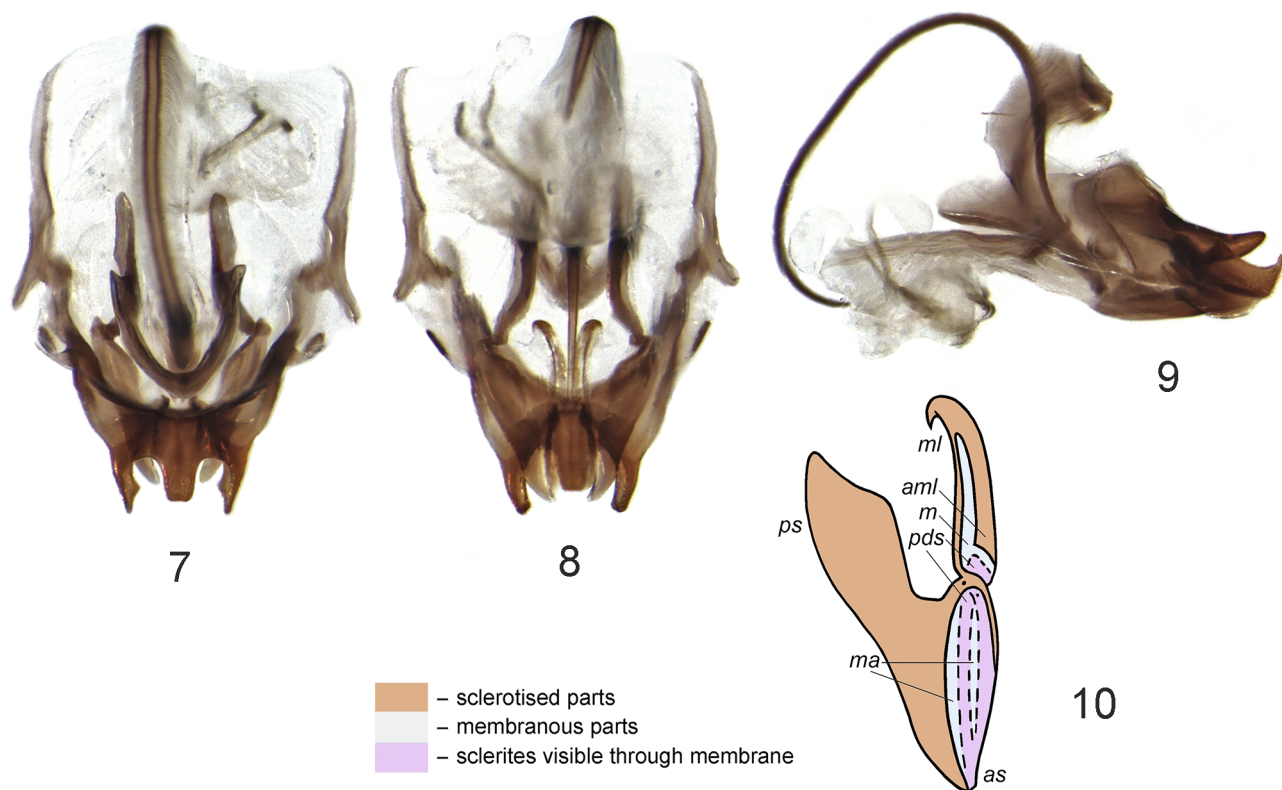
Head very large (much wider than pronotum) but not very high (Figs 1, 3, 4 and 6), with rostrum between antennal cavities approximately twice as wide as scape and strongly convex (especially in lower portion near clypeal suture; Figs 2, 3, 5 and 6); lateral sides of epicranium obliquely flattened (head almost triangular in dorsal view, i.e. somewhat similar to that of *Geogryllus mezei* Gorochov, 2019 and *Gigagryllus omayrae* Cadena-Castañeda, 2020); eyes rather small and nearly flat (barely convex; Figs 1–6); genae under and behind eyes widened and finely wrinkled; mouthparts (except for palpi) rather short (low) and much narrower than epicranial width (Figs 1 and 4); palpi rather long and thin (fifth segment of maxillary palpus distinctly longer than third one and much longer than fourth one).



Figs 1–6. *Mirolotmia dinocephala* gen. et sp. nov. 1–3, male; 4–6, female. Head in front (1, 4); head, pronotum, tegmina or their bases, and fore legs, from side (2, 5); body without left legs, from above (3, 6).

Pronotum distinctly transverse, rather high, strongly widening to head, with anterior margin of disc slightly concave, posterior margin almost straight and ventral margins of lateral lobes barely oblique (Figs 2, 3, 5 and 6). Tegmina far not reach-

ing abdominal apex, with more or less parallel longitudinal venation in lateral field of male and in lateral and dorsal fields of female (crossveins in these fields almost undeveloped in male but distinct in female; Figs 2, 5 and 6); dorsal tegminal



Figs 7–10. *Mirolotmia dinocephala* gen. et sp. nov. 7–9, male genitalia, from above (7), from below (8) and from side (9); 10, scheme of right ectoparamere, from below, and explanation of its colour coding. Abbreviations: *aml*, apex of mesal lobe; *as*, apical (medial) sclerite; *m*, membrane between mesal lobe and posterodorsal sclerite; *ma*, membranous area between apical and proximal sclerites; *ml*, mesal lobe; *pds*, posterodorsal sclerite; *ps*, proximal (main) sclerite.

field of male with normally developed stridulatory apparatus (this apparatus having normal stridulatory and diagonal veins, rather small angulate mirror, a few S-shaped oblique veins, and distinct chords) but almost lacking apical area (Fig. 3). Legs strong but not short; fore tibia having only outer tympanum which long and narrow; fore and middle tarsi somewhat shortened; hind femur well-adapted to jumping, distinctly longer than hind tibia; hind tibia and hind tarsus with normal spines and spurs, and with large basitarsal denticles. Anal and genital plates in both sexes simple, lobe-like. Cerci moderately long.

Male genitalia with epiphallus having three rather long posterior lobules (Figs 7–9), ectoparameres very similar to those of *Geogryllus* but without fusion of mesal lobe apex with posterodorsal sclerite apex and without spine-like process at place of this fusion or at each of these api-

ces (Fig. 10), endoparameres having moderately wide upper (dorsal) apodemes and distinct but somewhat narrower lower (ventral) apodemes, virga thin and acute but not very long and having rather small apodeme at base, sacculus moderately large and having distinct but rather thin sclerotised semitube along its dorsal and anterior (and partly ventral) edges (Figs 7–9). Ovipositor rather long, with apical part typical of Gryllini (Fig. 6).

Included species. Type species only.

Comparison. The new genus is clearly distinguished from all other genera of Brachytrupina by the male genitalia with three rather long lobules on the posterior epiphallic part. Additionally, it differs from the type species of *Cephalogryllus* and *Notosciobia* in the virga (rachis) not projected behind the posteromedian epiphallic edge; from possibly synonymous *Geogryllus*, *Gryllita*

and *Rubrogyllus*, in the absence of spine-like processes at the apices of the ectoparameral mesal lobes and of the ectoparameral postero-dorsal sclerites; from *Gigagyllus*, in the dorsal tegminal field of male not shorter than lateral one (*vs.* clearly shorter than lateral field), and the hind tibia having spines in both distal and proximal halves (*vs.* only in distal half); from *Tympanogyllus* Gorochov, 2001, in the much less numerous oblique veins in the male tegminal stridulatory apparatus; and from other indisputable or possible genera of this subtribe, in the following characters: a different head shape, strongly shortened tegmina in both sexes, and/or a more complex structure of the ectoparameres in the male genitalia.

Etymology. The new genus is named in honour of the collectors of its type species, M. Mironov and E. Lotmentseva. Gender is feminine.

***Mirolotmia dinocephala* sp. nov.**

(Figs 1–10)

Holotype. Male; **Indonesia**, *West Papua Prov.*, Raja Ampat Archipelago, Waigeo I., forest in environs of Saporkren Vill., 4–16.XII.2017, M. Mironov & E. Lotmentseva leg.

Paratypes. Four females, same data as for holotype.

Description. Male (holotype). Body shining, with following coloration (Figs 1–3): head dark brown with slightly lighter (brown) median band running from median ocellus to clypeal suture, small area located behind this ocellus (in contact with above-mentioned band) and connected with lateral ocelli by a pair of short transverse stripes, four poorly distinct longitudinal stripes on dorsum situated behind eyes and previous area, scapes and mouthparts (except for dark brown dorsolateral areas on mandibles and yellowish palpi), with greyish eyes, and with light brown ocelli and remainder of antennae; pronotum dark brown with a pair of brown spots on disc; tegmina with brown basal area, distal part of dorsal field (including mirror) and band on lateral field along its dorsal margin, with transparent remainder of dorsal field, with almost whitish band on lateral field along its ventral margin, and with greyish remainder of this field having darker (brown) venation; legs light brown with transparent tympanic membranes, brown to dark brown distal areas on

all femora, and brown numerous oblique lines on outer and dorsal surfaces of remainder of hind femur; abdominal tergites, anal plate and paraprocts brown; venter of body and cerci light brown but with a pair of almost brown spots on lateral parts of genital plate.

Median ocellus distinct, transverse and narrow; lateral ocelli medium-sized, round; all ocelli located in corners of strongly transverse triangle (Figs 1 and 2). Tegmina reaching sixth abdominal tergite, with dorsal field truncately rounded in apical part and having 3–4 oblique veins, and with 8–9 longitudinal veins in lateral field (Figs 2 and 3). Outer tympanum almost 3.2 times as long as wide and approximately 1.2 times as long as maximum width of fore tibia in place where tympanum located. Hind tibia with five pairs of dorsal articulated spines (inner spines somewhat longer than outer ones; proximal spines distinctly shorter than distal ones), with dorsal inner (apical) spur longest and reaching middle third of hind basitarsus, with middle inner spur slightly shorter, with dorsal and middle outer spurs medium-sized, and with two ventral spurs shortest (slightly shorter than longest spines of this tibia). Hind basitarsus with four inner and six outer dorsal denticles as well as with inner spur almost reaching middle of apical tarsal segment and approximately twice as long as outer spur (Fig. 3). Genital plate almost 1.5 times as long as anal plate. Genitalia as in Figs 7–10.

Female. General appearance as in male, but head slightly smaller (narrower) and with barely less convex median part of anterior epicranial surface as well as with somewhat more distinct ornament (Figs 4–6), tegmina reaching second or third abdominal tergites and having 9–11 longitudinal veins in dorsal field and 7–8 longitudinal veins in lateral field (Figs 5 and 6), and anal plate almost 1.5 times as long as genital plate. Ovipositor somewhat shorter than hind femur (Fig. 6).

Length (mm). Body: male 24, female 19–24; pronotum: male 4, female 3.5–4; tegmina: male 9, female 5–6; hind femora: male 15, female 12.5–15.5; ovipositor 9–12.

Etymology. The name of this species is a Latinised adjective composed of the Ancient Greek words δεινός [*dinos*], “terrible”, and κεφαλή [*cephala*], “head”.

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